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THE BIOLOGICAL SURVEY MAMMAL COLLECTION

Compiled in the Section of Wildlife Surveys
Division of Wildlife Research

The Bureau of Biological Survey had its inception on July 1, 1885, when there became available $5,000 that had been appropriated by the 48th Congress for the promotion of economic ornithology. The unit, with C. Hart Merriam in charge, was made a branch of the Division of Entomology. A year later, July 1, 1886, the project was separated from the Division of Entomology and made independent under the name "Division of Economic Ornithology and Mammalogy." An appropriation of $10,000 was granted for the promotion of economic ornithology and mammalogy, thus enlarging the scope of the work over the previous year and increasing its usefulness. The function of the enlarged Division was to investigate the food habits, distribution, and migrations of North American birds and mammals in relation to agriculture, horticulture, and forestry. By act (29 Stat. L., 99, 100, 102) approved April 25, 1896, the organization became known as the Division of Biological Survey and it retained this title until March 3, 1905, when it was designated as the Bureau of Biological Survey.

The Biological Survey mammal collection is limited to specimens of recent North and Middle American[1] species, of which it has the largest representation of any collection in the world. Included is the type specimen of the smallest North American mammal, Microsorex hoyi winnemana, a tiny shrew less than 3 inches long from tip of nose to tip of tail, which was collected by Edward A. Preble along the Potomac, on the Virginia side of the river, and the type of the largest species of all existing carnivores, the Kodiak bear, Ursus middendorffi, collected by B. J. Bretherton on Kodiak Island, Alaska.

The most cherished, valuable, and really irreplaceable specimens of any collection are the types and topotypes. There are 1,313 type specimens in the Biological Survey collection, 1,261 of which were described by members of the Biological Survey staff. More than 2,500 species and subspecies of North American mammals are recognized today and many more doubtless will be. During his administration as chief of the Bureau of Biological Survey Dr. Merriam made a special effort to obtain for the collection a representative

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1/ Middle America is the zoogeographic region between the Rio Grande and Colombia.

series of topotypes, i.e., additional specimens from the type locality, because of their importance in determining the validity and relationships of species and subspecies. He also, among other studies, conducted special research on the brown and grizzly bears, and for this investigation 1,864 specimens were gathered together. In 1918 the results of the study were published (Review of the Grizzly and Big Brown Bears of North America (Genus Ursus), North Amer. Fauna No. 41). In this work Dr. Merriam described 22 new forms, which with the 59 he had previously named from the collection brought the total to 81. This study of material in the collection is representative of many others made by various scientists.

Dr. Merriam, who was interested in many generic groups, described 651 of the type specimens now in the collection, and Edward A. Goldman described 266. Other members of the Bureau's staff past or present who have described several new forms include Vernon Bailey, A. H. Howell, H. H. T. Jackson, E. W. Nelson, W. H. Osgood, and E. A. Preble.

The mammal specimens collected for the Biological Survey by the Death Valley Expedition in 1891 numbered about 5,000 and comprised the largest contribution from a single expedition. E. W. Nelson and E. A. Goldman collected more than 17,000 mammals in Mexico over a period of years, thus making the largest contribution of any collector or team of collectors.

The early reports of the Chief of the Division of Ornithology and Mammalogy record the progress of the organization. In 1890 it was stated: "The collection begun by the Division a little more than a year and a half ago has made gratifying progress, now numbering upwards of 4,000 specimens of mammals." In the annual report of 1891 the Chief stated: "The study series of mammals and birds belonging to the Division has been so largely increased during the year that the entire time of one clerk is necessary for the proper care of the collection." During succeeding years the mammal collection steadily grew until on January 1, 1940 it numbered 136,613 specimens, consisting of skins, skulls, and skeletons.

The small mammals are made up into standard study skins and are arranged in pasteboard trays in drawers in metal-covered cases (fig. 1,A), while the larger skins are tanned and hung in a specially constructed room, where they are suspended from iron rods by loops of cords passed through the skin above the nose and attached to a rod with an S-hook (fig. 1,B). The skulls are placed in vials, cardboard boxes, or cardboard trays, according to size, and are arranged in proper order. Details of technique and methods in the care of the Bureau collection have been described in a paper entitled, "The Care of Museum Specimens of Recent Mammals," by Hartley H. T. Jackson (Jour. Mamm. 7: 113-118, illus. 1926).

When the Biological Survey was asked to undertake the control of predatory animals in 1916, a special effort was made to utilize to best advantage the mammals killed, and large numbers of specimens taken by hunters were deposited in the collection. As a result, the Survey collection now contains specimens of 986 wolves, 3,523 coyotes, and 540 mountain lions, the largest study series of these North American predators in the world. The mountain lions are being revised by E. A. Goldman, who has described 6 new forms from this collection. The

wolves are also in process of investigation (fig. 1,C), but the coyotes have not yet been intensively studied.

The collection is indispensable in connection with the administration of wildlife along the many lines embraced in the general activities of the Bureau, and is the basis for all of its distributional, taxonomic, and identification studies on mammals. Specimens are available also for research purposes to responsible museums, educational institutions, and scientists throughout the country.

The following 19 new genera of rodents and rabbits have been described from the collection: Microdipodops, Pappogeomys, Cratogeomys, Platygeomys, Heterogeomys, Orthogeomys, Macrogeomys, Zygogeomys, Liomys, Ototylomys, Neotomodon, Nelsonia, Teanopus, Hodomys, Xenomys, Phenacomys, Napaeozapus, Brachylagus, and Romerolagus, 14 of these from specimens collected by Nelson and Goldman in Mexico.

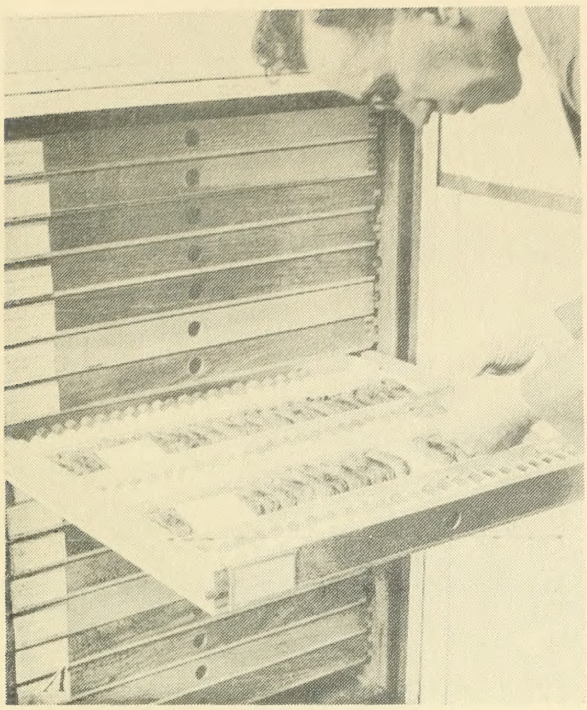
The Biological Survey collection of North American recent mammals is stored in the United States National Museum, and laboratory facilities for study are provided there. The collection is accessioned in the museum catalogs, but is maintained as an independent unit. The richness of its composition from North America is shown by the following enumeration as of January 1, 1940:

Specimens of mammals in the Biological Survey collection
January 1, 1940

This list does not include any specimens collected outside of North and Middle America and the West Indies, nor any alcoholic specimens, all of these, together with nearly all of the pinnipeds, having been transferred to the United States National Museum collection proper.

Marsupialia (opossums):		
Didelphiidae		523
Insectivora (moles, shrews):		
Talpidae	989	
Soricidae	6,565	
Total		7,554
Chiroptera (bats):		
Emballonuridae	62	
Noctilionidae	10	
Phyllostomidae	540	
Desmodontidae	64	
Natalidae	47	
Vespertilionidae	2,622	
Molossidae	463	
Unidentified	62	
Total		3,870
Carnivora (flesh-eating mammals, including bears, weasels, wolves, cats, etc.):		
Ursidae	3,205	
Procyonidae	781	
Bassariscidae	165	
Mustelidae	6,894	
Viverridae	4	
Canidae	6,412	
Felidae	2,647	
Total		20,108
Pinnipedia (walruses, seals):		
Otariidae		2
Primates (Monkeys):		
Callitrichidae	11	
Alouattidae	38	
Aotidae	10	
Cebidae	63	
Total		122
Rodentia (squirrels, pocket gophers, mice, rats, etc.):		
Sciuridae	22,187	
Geomyidae	8,056	
Heteromyidae	11,358	
Castoridae	300	
Cricetidae	51,454	
Muridae	655	
Aplodontiidae	264	
Zapodidae	1,411	
Erethizontidae	958	
Enchimyidae	57	
Dasyproctidae	55	
Cuniculidae	26	
Hydrochoeridae	6	
Total		96,787
Lagomorpha (hares, rabbits, pikas):		
Ochotonidae	824	
Leporidae	4,873	
Total		5,697
Artiodactyla (even-toed hoofed mammals, including pigs, deer, oxen, etc.):		
Tayassuidae	86	
Cervidae	1,165	
Antilocapridae	106	
Bovidae	512	
Total		1,869
Perissodactyla (tapirs, horses):		
Tapiridae		9
Xenarthra (edentates):		
Bradypodidae	5	
Choloepodidae	3	
Myrmecophagidae	24	
Dasypodidae	40	
Total		72

Grand total for the entire mammal collection 136,613



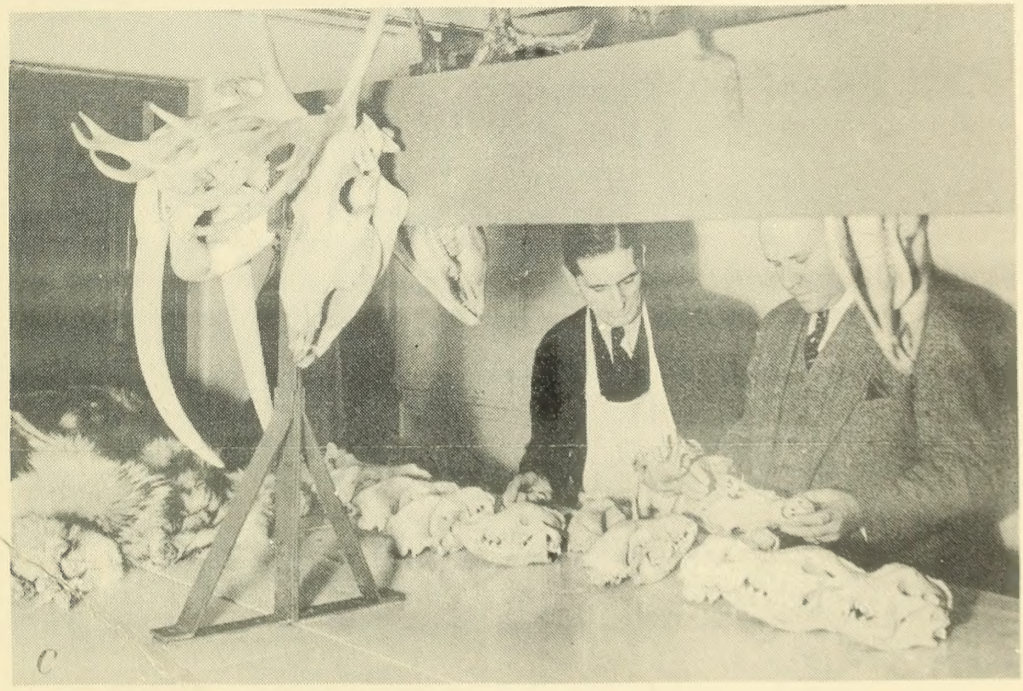


FIGURE 1.--A, Quarter-unit case for small skins. Half-unit case is twice as long but is of same depth and height. Unit case is greater than half-unit in all dimensions and has about four times the volume. B, Section of tanned-skin room: wolf skins at right; bobcat and lynx skins at left. C, Comparing wolf skulls for identification in the skull room. Tops of storage cases are used for table space. Rack on top of cases is used for large-antlered skulls.